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May 26, 1993

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FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

**Ms. Donna Searcy**  
Secretary

Before the  
**FEDERAL COMMUNICATIONS COMMISSION**  
Washington, D.C. 20554

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In the Matter of )  
 )  
Amendment of the Commission's Rules )  
to Establish Rules and Policies )  
Pertaining to a Non-Voice, )  
Non-Geostationary Mobile Satellite )  
Service )

CC Docket 92-76

MAY 26 1993

FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

To: The Commission

**REPLY COMMENTS OF LEO ONE CORPORATION**

LEO ONE CORPORATION

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May 26, 1993

## SUMMARY

The little LEO satellite service promises to provide the first generation of satellite-delivered, low cost, flexible mobile data communications services. These satellite systems will communicate across national borders. Therefore, each government must be cognizant that its domestic actions will have on the ability of other nations to implement and regulate LEO systems. All ITU member nations have agreed to abide by obligations that ensure that each nation will have equitable access to the radio frequency spectrum. At WARC-92, these obligations were applied to the emerging LEO service through Resolutions 46 and 70. Resolution 70 urges all administrations to establish standards to ensure equitable and standard conditions of access for all nations to the limited of LEO spectrum.

There are several foreign proposals for little LEO systems besides those companies seeking authority from the FCC. The Commission's proposed rules, however, fail to provide a means of accommodating either international or additional domestic NVNG MSS systems. The sharing plan endorsed by the Commission seems to be a means of dividing among the three current applicants while ignoring the needs of other system proponents. By endorsing this sharing plan, which effectively places no limits on the spectrum to be used by the initial applicants, and leaving decisions on modulation and access schemes solely to the discretion of these applicants, the Commission may have abdicated its international responsibilities to provide equitable access to the spectrum by other nations.

The Commission should take a more flexible approach to spectrum assignments and impose specific technical and coordination requirements that will promote spectrum efficiency and preserve sufficient spectrum for other little LEO systems. Before finalizing its decisions, the Commission should enter into discussions with other administrations, CITEL, the CCIR or other ITU forums to develop mutually agreeable solutions to the modulation and coordination issues. These discussions would be consistent with the mandate of Resolution 70 of WARC-92 and the already expressed concern of other nations that the United States is attempting to exercise de facto control of the NVNG MSS services by promoting a worldwide first come, first served approach to LEO spectrum. U.S. attempts to resolve these technical sharing issues on the basis of equitable access will demonstrate the Commission's true commitment to promoting multiple entry of additional NVNG MSS systems -- creating a multinational, multi-provider competitive marketplace serving the entire world with mobile services of the highest quality and lowest price.

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To: The Commission

**REPLY COMMENTS OF LEO ONE CORPORATION**

LEO ONE Corporation ("LEO ONE"), by its attorney, submits this reply to the comments received by the Commission in its Notice of Proposed Rulemaking in the above-captioned proceeding. By this action, the Commission seeks to establish procedures, operational rules and technical standards for a revolutionary, worldwide new radio service: the Non-Voice, Non-Geostationary Mobile-Satellite Service ("NVNG-MSS"), also known as the "little" LEO (low-earth orbit) service.<sup>1</sup>

In its initial comments, LEO ONE urged the Commission to ensure that its technical policies did not foreclose the potential for additional little LEO service providers. It noted that under the frequency assignment plans developed in the negotiated rulemaking, only a minimal amount of spectrum would remain to accommodate future entrants and that licensees would have no firm obligation to coordinate with new licensees, either foreign or domestic. LEO ONE asked that the Commission review the ongoing technical experiments and discuss means of sharing

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<sup>1</sup> Notice of Proposed Rulemaking in Common Carrier Docket 92-76 ("NPRM"), FCC 93-28, released February 10, 1993. See also, Amendment of Section 2.106 of the Commission's Rules to Allocate Spectrum to the Fixed-Satellite Service and the Mobile-Satellite Service for Low-Earth Orbit Satellites, Report and Order in E.T. Docket 91-280, FCC 93-29, released February 5, 1993.

this limited spectrum with the appropriate International Telecommunications Union organizations before promulgating final rules.

### **BACKGROUND**

LEO ONE has a vital interest in the outcome of this proceeding. It was established in early 1993 to integrate a corporate family of regional firms that will collectively offer worldwide little LEO services. LEO ONE has the responsibility for integrating the design, construction and implementation of the LEO ONE satellite constellation. The regional companies will establish terrestrial gateway facilities to operate within the LEO ONE system and will be responsible for marketing LEO ONE service in their respective geographic areas. The LEO ONE principals include a broad group of mobile communications operators and international investors. The company will operate on a multinational basis. LEO ONE Panamericana, a Mexican corporation, is LEO ONE's affiliated regional operator to market LEO services in Mexico and throughout Latin America. In mid-1992, LEO ONE Panamericana applied to the Secretary of Communications and Transport ("SCT") in Mexico to develop an experimental LEO program and established a strategic alliance with Telecomunicaciones de Mexico (TELECOMM) to develop an NVNG MSS system.

LEO ONE strongly supports ORBCOMM's call for the creation of a competitive LEO marketplace. LEO ONE is also in agreement with a number of the proposals made in the NPRM. It is in complete accord with the comments to the extent they support the creation of a market structure that will allow the introduction of additional NVNG MSS systems. As ORBCOMM notes, multiple entry should be

encouraged to ensure that customers receive service at the highest quality and lowest price. The rules must also provide for a measure of technical and operational flexibility in order to spur innovation. ORBCOMM comments at 4-5.

LEO ONE believes, however, that the Commission must translate these laudable goals into reality through rules that promote the efficient use of spectrum and facilitate the implementation of international NVNG MSS systems.

## **DISCUSSION**

### **I. LOW EARTH ORBIT SYSTEMS ARE INHERENTLY GLOBAL IN NATURE AND MUST BE REGULATED IN ACCORDANCE WITH THIS REALITY**

systems. The Commission therefore must be extremely sensitive to its general international obligations as it considers rules and policies for this service.

## **II. ALL ITU MEMBERS HAVE AN INTERNATIONAL OBLIGATION TO PROVIDE EQUITABLE ACCESS TO NVNG MSS SPECTRUM**

Equitable access to the radio frequency spectrum is a fundamental tenet of the International Telecommunications Union (ITU) Constitution, and it was re-enforced as a commitment pertaining to NVNG MSS spectrum at the 1992 World Administrative Radio Conference (WARC-92).

As the Commission recognized in its Notice, all non-geostationary mobile satellite services providers will be required to meet both international obligations and the national requirements imposed upon them by the Commission and other licensing administrations.<sup>2</sup> Specifically, Resolution 46 of WARC-92 directs administrations to effect coordination with other administrations whose assignment to an NVNG MSS satellite network may be affected before notifying the IFRB.<sup>3</sup> Resolution 70 of WARC-92 reminds member administrations that radio frequency spectrum is a limited natural resource to which all ITU members should have access on equitable conditions. Since there are as yet no standards governing the coordination, sharing and operation of NVNG MSS systems and only a very limited number of systems can co-exist, the ITU and its member administrations should make it a priority to establish standards "so as to ensure equitable and standard conditions of access for all

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<sup>2</sup> NPRM at paragraph 32.

<sup>3</sup> Interim Procedures for the Coordination and Notification of Assignments of Non-Geostationary-Satellite Networks in Certain Space Services and the Other Services to Which the Bands are Allocated, Annex to Resolution Com 5/8, Final Acts of WARC-92.



countries..."<sup>4</sup> Resolution 70 is consistent with the long-established precedent on use of outer space, which prohibits national appropriation of the outer space resource and calls for co-operation, mutual assistance and respect for the corresponding interests of all other states.<sup>5</sup> These international commitments must be put into practical effect by each administration as it moves to authorize LEO systems.

### **III. THE CURRENT FCC TECHNICAL PROPOSALS MAY NOT ALLOW THE UNITED STATES TO MEET ITS INTERNATIONAL OBLIGATIONS**

In the United States, two companies -- ORBCOMM and STARSYS -- are planning commercial little LEO satellite systems and one company -- VITA -- is seeking to create an international non-profit LEO system. A review of International Telecommunication Union records indicates that in addition to the United States, France, and Russia, at least three administrations have submitted advanced publication to use the NVNG MSS bands.<sup>6</sup> At a recent CITEL meeting, the Mexican delegation noted that it is presently evaluating whether to establish its own LEO system.<sup>7</sup> According to a recent report from the Commission of the European Communities,

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<sup>4</sup> Establishment of Standards for the Operation of Low-Earth Orbit Satellite Systems, Resolution 46, Final Acts of WARC-92.

<sup>5</sup> Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, entered into force on October 10, 1967, See in particular, Articles II and IX.

<sup>6</sup> "List of Requests for Advance Publication Received From December 1992 to April 23, 1993," Annex to Weekly Circular No. 2076 of May 11, 1993. International Telecommunication Union Radiocommunication Bureau.

several proposals plan either to make use of non-geostationary orbit or compete with LEOs using the geostationary orbit.<sup>8</sup>

The worldwide interest in providing NVNG MSS services suggests that the Commission, as well as other administrations, must commit to finding a means for coordinating all of these systems. The Commission's Notice, however, fails to provide a means of accommodating either additional international or domestic NVNG MSS systems. The Commission clearly supports the goal of multiple entry and additional entrants in line with its international commitments,<sup>9</sup> but fails to explain how this goal will be accomplished in practice. In fact, the Commission then indicates that it is concerned only with accommodating the applicants before it and that it will delay to some future date the determination of how many future users may occupy the NVNG MSS spectrum.<sup>10</sup>

As recently as last month the United States informed the international community that there was spectrum to accommodate not only the current applicants before the FCC, but spectrum left over for future entrants as well.<sup>11</sup> The

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<sup>8</sup> These proposals include EMS and ARTEMIS from the European Space Agency, ARCHIMEDES also under the auspices of the European Space Agency, Calling Communications, and TRITIUM from Hughes Space Systems. Communication From the Commission on satellite personal communications, Commission of the European Communities, Com(93) 171 final, April 27, 1993.

<sup>9</sup> NPRM at paragraph 32.

<sup>10</sup> NPRM at paragraph 7. It now seems that the Commission may believe that its multiple entry policy should be meant to encompass only the two domestic commercial applicants before it plus VITA. "Our objective is to accommodate the three proponents that have applied for a spectrum allocation for LEOs and possibly a second generation of licensees." Report and Order at paragraph 13. (emphasis added).

<sup>11</sup> "Low Earth Orbit Satellites (LEO ) Below 1 GHz," Information Paper Submitted by the United States of America to the Second Meeting of the Permanent Technical Committee III: Radiocommunications of the Inter-American Telecommunication Conference, Mexico City, April 26-30, 1993. This statement is consistent with assertions in the Commission's NPRM, Report and Order and Report of the Negotiated Rulemaking Committee.

Commission's Notice endorses the sharing plan put forth by the current applicants and indicates that "some room appears to exist for future applicants."<sup>12</sup> The sharing plan proposed by ORBCOMM, STARSYS and VITA (LEOAC-15), however, seems to be nothing more than a means of dividing the available spectrum among the three existing applicants. A careful review of the record will reveal that only a small amount of spectrum remains for additional commercial international systems. In addition, it is not clear whether the FDMA scheme proposed by ORBCOMM or the CDMA system proposed by STARSYS can permit additional entry by any other commercial providers, whether U.S. or foreign-based.

By leaving decisions on modulation and access schemes solely to the discretion of the current applicants, the Commission may have abdicated its international responsibilities. LEO ONE strongly urges the Commission to adopt specific policies that will ensure that other NVNG MSS system operators have equitable access to the band.

#### **IV. THE FCC SHOULD TAKE THE NECESSARY STEPS TO ENSURE SPECTRUM SHARING IN CONSULTATION WITH OTHER ADMINISTRATIONS AND INTERNATIONAL ORGANIZATIONS**

The Commission, in its NPRM, has proposed no limits on the spectrum it will grant to the initial applicants nor has it proposed a flexible band segmentation scheme as a means of dividing the limited available spectrum. In addition, it has not

~~proposed any measures that will ensure the efficient use of spectrum and~~



In addition to these specific methods, LEO ONE would urge the Commission to establish technical parameters that would lead to compatible systems and the most potential for sharing.

The Commission of the European Communities has recently voiced concern that the U.S. may be in a position to deny use of the LEO spectrum to potential foreign competitors while facilitating domestic start-ups by ignoring the need for international compatibility standards. The European Commission questions the efficacy of a first come, first served approach to allocating spectrum, particularly when a small amount of spectrum must be shared in an equitable manner. It concludes that "the underlying questions of equitable access to frequency spectrum and frequency sharing will need to be considered and resolved at [the] global level rather than solely at [the] national level before any of these systems are licensed."<sup>14</sup>

At the most recent CITEL Permanent Technical Committee III (PTC III) meeting, proposals were made to exchange information and formulate recommendations on the use of low earth orbit satellites at the upcoming PTC III. These discussions would attempt to optimize current and future use of the spectrum; suggest modulation and optimization schemes that would take into account the right of

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<sup>14</sup> Communication from the Commission on satellite personal communications, page 9, 9-11. In the context of LEO Systems Above 1 Ghz, a recent Report to the Commission of the European Communities concluded that both the FCC and the negotiated rulemaking committee have largely ignored the question of international coordination of MSS systems. "While the parties have made general statements regarding the need for foreign consultations and international coordination, neither the Committee nor the FCC has addressed the issue of how the U.S. domestic rules will apply to international systems, how spectrum will be allocated among systems authorized by other countries, and how the U.S. will respond if other countries adopt significantly different approaches to MSS spectrum sharing or authorize technically incompatible systems.... By proceeding first and in this manner, the U.S. could exercise a meaningful degree of de facto control over the development of MSS systems worldwide." "Report For the Commission of the European Communities, Mobile Satellite Services Above 1 Ghz: The FCC's Negotiated Rulemaking Proceeding for Satellite Personal Communications Systems," prepared by Goldberg, Godles, Weiner & Wright, April 26, 1993, pp. 22-23.

all CITEL countries to develop future LEO systems; establish a coordination procedure; and share information on the experimental plans that have been carried out.

Since the United States is in the forefront of implementing these systems, it has every incentive to take the lead role in resolving these coordination and compatibility issues. LEO ONE strongly urges the Commission to heed the concerns of the European Commission, and take the opportunity to continue to use the CITEL or CCIR fora, by initiating discussions aimed at developing a technical basis for the cooperative implementation of international LEO systems.

In conjunction with multilateral discussions with the European Commission or within CITEL or the CCIR, the Commission should explore potential technical resolutions on a bilateral basis. The Commission should initiate a dialogue with those nations who have demonstrated a serious interest in authorizing NVNG MSS systems. These talks may lead to an understanding of how multiple international LEO systems can be accommodated on an equitable basis.

## **V. OTHER ISSUES**

Space Technology Services International urges the Commission to ensure that domestic LEO service providers using a foreign-licensed NVNG MSS system have access to the U.S. market through U.S.-based ground segments. LEO ONE supports this position. Such a policy reflects not only the inherently international nature of the NVNG MSS services, but reflects the business arrangements that are now evolving

between the U.S. applicants and foreign investors.<sup>15</sup> U.S.-licensed systems will most likely combine with local service providers in many countries to deliver data to consumers in those countries. The Commission should recognize that foreign licensees will see the same advantage of joining with U.S. companies to serve the U.S. market. This access to the U.S. market by foreign-based satellite systems should be conditioned upon U.S.-based satellites -- with local service providers -- receiving reciprocal access to the relevant foreign market. This policy will promote an open, competitive market for NVNG MSS businesses irrespective of the national origin of the satellite licensee.

In its NPRM, the Commission proposed to allow each NVNG MSS operator to elect to provide services on either a common carrier or non-common carrier basis.<sup>16</sup> LEO ONE agrees with ORBCOMM and STARSYS that the service provider should be permitted to choose between common carrier or non-common carrier status consistent with its business plans. This flexibility will allow each provider to seek out investors and business partners on a worldwide basis.<sup>17</sup>

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<sup>15</sup> For example, the recently announced agreement between ORBCOMM and Teleglobe, a Canadian corporation, would have ORBCOMM serving as the FCC licensee and Teleglobe responsible for establishing and operating systems outside the United States.

<sup>16</sup> NPRM at paragraphs 33-36.

<sup>17</sup> Leo One is also concerned with recent proposals in the House of Representatives to amend Section 332 of the Communications Act of 1934. The amendment would require NVNG MSS licensees, as providers of "commercial mobile service" to be treated as non-dominant common carriers. Leo One suggests that the Commission should recognize that the LEO space segment operator is likely to be merely a wholesale carrier of communications, with actual service to the public provided by either affiliated or independent gateway service operators. As such, it should be possible to make a distinction between NVNG MSS licensees and the gateway providers that are interconnected with the public switched network and thereby provide service directly to the general public.

## **CONCLUSION**

The Commission must be sensitive to its international obligations as it moves to implement NVNG MSS systems. Because the United States is further along in the process of initiating these systems, it must be particularly careful to ensure that all nations have equitable access to what will be the first truly global satellite service.

The implementation of little LEO satellite services offers a tremendous opportunity to provide new mobile communications products to the public. It also provides the U.S. with the opportunity to demonstrate its leadership in creating a multinational, multi-provider environment in a framework of mutual respect for other countries. However, if these promises are to be realized, the United States must seek to develop rules and policies that allow the introduction of additional little LEO satellite systems.

Respectfully submitted,



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May 26, 1993



CERTIFICATE OF SERVICE

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